



steps to enable persistent stratospheric-based communications and infrastructure in those bands where they can operate compatibly with other permitted uses to provide high capacity communications solutions.<sup>2</sup> To that end, Elefante Group supports initiation of a proceeding to make a non-Federal Fixed Services allocation and to adopt technical, operational, and licensing rules, in the 25.25-27.5 GHz band (the “26 GHz Band”) to enable commercial persistent stratospheric communications systems as an essential component of next generation networks.<sup>3</sup> The 24.25-27.5 GHz range is a key band that is being studied for High Altitude Platform Stations – persistent stratospheric radiocommunications stations operating between 20 and 50 km altitude – at the 2019 World Radiocommunication Conference (“WRC-19”) for Region 2, in Agenda Item 1.14. This agenda item reinforces the propriety of the Commission considering the 26 GHz Band for the broader category of persistent stratospheric-based communications systems, *i.e.*, including those operating below 20 km. As Elefante Group explained, its analyses being conducted with Lockheed Martin Corporation (“Lockheed Martin”) provide a strong indication that Elefante Group can achieve its objectives of compatible stratospheric operations without causing harmful interference (based on a risk-based analysis) to existing Federal aeronautical mobile service downlinks operating in the 25.5-27.5 GHz band or to NASA downlinks from Earth Exploration Satellite Service (“EESS”) geostationary satellites or to Tracking and Data Relay Satellite (“TDRS”) inter-satellite links operating in the frequency range.

Several commenters responding to the *Second FNPRM* contend that the Commission should allocate the 26 GHz Band for flexible mobile and fixed terrestrial use, subject to licensing

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<sup>2</sup> See Comments of Elefante Group, Inc. GN Docket No. 14-177 et al. (filed Jan. 23, 2018).

<sup>3</sup> By “persistent” Elefante means operating over many months at a nominally fixed location.

through auctions, *i.e.*, to the Upper Microwave Flexible Use Service (“UMFUS”).<sup>4</sup> These commenters advocate that the Commission consider establishing UMFUS in the 26 GHz Band. They claim that this action, in combination with the Commission’s earlier designations in this proceeding, of 24.75-25.25 and 27.5-28.35 GHz for UMFUS, will allow for almost four gigahertz of contiguous UMFUS spectrum.<sup>5</sup>

The Commission should decline to make the 26 GHz Band available for UMFUS for several reasons. First, the Commission has not yet designated any spectrum for persistent stratospheric platform communications. Such systems will constitute an important part of next generation rural and urban networks.<sup>6</sup> By contrast, the Commission has already designated or is considering for designation more than ten gigahertz of spectrum for UMFUS in the *Spectrum*

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<sup>4</sup> See Comments of CTIA, GN Docket No. 14-177 et al., at 8-10 (filed Jan. 23, 2018); Comments of AT&T, GN Docket No. 14-177 et al., at 5 (filed Jan. 23, 2018); Comments of T-Mobile, GN Docket No. 14-177 et al., at 11-12 (filed Jan. 23, 2018); and Comments of Nokia, GN Docket No. 14-177 et al., at 6-7 (filed Jan. 23, 2018).

<sup>5</sup> Additionally, Huawei and Nokia each suggest that the Commission should, in effect, treat as provisional its determination in the *Second Report and Order* to not consider the 71-76 and 81-86 GHz bands for mobile operations. See Comments of Huawei, GN Docket No. 14-177 et al., at 9 (filed Jan. 23, 2018); Comments of Nokia at 5. Neither party formally sought reconsideration of the Commission’s – and filing comments in response to the *Second FNPRM* is the improper means to do so, in any event – and neither offers any new information to suggest that the Commission was wrong in its decision. The Commission, in the *Second Report and Order*, took Huawei’s and Nokia’s positions into account when determining that it would not introduce flexible mobile services at this time into these bands. See *Second Report and Order* ¶ 199 (discussing arguments of proponents for mobile operations in the 71-76 and 81-86 GHz bands). The Commission should decline to reopen this matter and give the Fixed Services in these bands an opportunity for future growth, including consideration of Elefante Group plans to use the band for Fixed Service gateway communications supporting its stratospheric platform communications systems. See *id.* ¶ 201 (discussing Elefante Group proposal).

<sup>6</sup> In the next several months, Elefante Group intends to file a petition for rulemaking with the Commission as an important step to achieving these ends. The petition will fully set out Elefante Group’s plans for a regulatory framework that provides adequate spectrum for high capacity, persistent stratospheric communications and licensing, operational, and technical rules for competitive deployment of stratospheric communications systems to meet a variety of next generation network needs.

*Frontiers* proceeding.<sup>7</sup> Much as it did by recognizing the 40.0-42.0 and 48.2-50.2 GHz bands as core satellite frequencies in the November 2017 *Second Report and Order*, the Commission should recognize the 26 GHz Band as a core band for stratospheric communications services.<sup>8</sup> In this manner, the Commission will best serve the public interest by enabling next generation networks and applications to exploit the distinct and complementary advantages of multiple platforms: stratospheric systems, ground-based terrestrial flexible use networks, and satellite systems. As Elefante explained earlier in this proceeding, persistent stratospheric systems possess certain operational and performance advantages for many applications over ground-based and satellite systems.<sup>9</sup> Furthermore, persistent stratospheric communications systems, such as Elefante Group is designing, are more spectrum efficient than other broadband technologies. Ensuring persistent stratospheric communications systems, such as those planned by Elefante Group, have access to adequate spectrum, therefore, will promote solutions for numerous national objectives with features that mobile- and satellite-based systems will not have: including the promotion of more spectrally efficient and cost-effective broadband and next generation network infrastructure, the more expeditious bridging of the digital divide with significantly less build-out requirements and high capacities, and providing a unique mechanism

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<sup>7</sup> Specifically, the Commission has made 5.5 gigahertz of spectrum available for UMFUS in the First and Second Reports and Order and associated decisions. Further, as commenters advocating for an UMFUS designation in the 26 GHz Band explain, the Commission currently has another 4.3 gigahertz under consideration for UMFUS in the proceeding by virtue of the July 2016 Further Notice. *See* Comments of CTIA at 6-8 (advocating the designation of the 31.8-33.4, 42.0-42.5, and 50.4-52.6 GHz bands for flexible terrestrial use); Comments of T-Mobile at 11 (same); Comments of AT&T at 4-5 (same). Moreover, the UMFUS proponents urge the Commission to make the remaining Local Multipoint Distribution Service (“LMDS”) spectrum available for UMFUS, yet another 450 megahertz of spectrum (namely, 29.1-29.25 and 31-31.3 GHz). *See, e.g.*, Comments of CTIA at 2, 5-6.

<sup>8</sup> The Commission should also recognize the 21.4-22.2 and 22.55-24.0 GHz bands as core stratospheric platform communications bands.

<sup>9</sup> *See* Comments of Elefante Group, GN Docket No. 17-183, at 3-4 (filed Oct. 2, 2017).

for reliable operations during and restoration after damaging major storms and other natural disasters.<sup>10</sup>

Second, despite the fact that the ITU and CITEL were looking at the 26 GHz Band for possible IMT consideration even before the initial 2015 rulemaking in this proceeding,<sup>11</sup> the Commission has foregone several earlier opportunities to propose using the band for flexible terrestrial mobile and fixed services. Specifically the Commission did so in the initial October 2015 *Spectrum Frontiers NPRM* and the July 2016 *Spectrum Frontiers Further Notice of Proposed Rulemaking*.

Third, the claimed advantage of the prospect for almost four gigahertz of contiguous spectrum in the 24.75-28.35 GHz for UMFUS is largely illusory, since there is no guarantee or even inherent likelihood that single licensees would have use of the contiguous spectrum, particularly if there are any limits on spectrum aggregation. In any event, carrier aggregation technologies increasingly minimize the importance of contiguous spectrum.

Fourth, the claims that designation of the 26 GHz Band is necessary for international harmonization of this band are exaggerated. Taking advantage of frequency tuning ranges, the availability of 24.25-24.45, 24.75-25.25, and 27.5-28.35 GHz in the United States for next

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<sup>10</sup> See generally Comments of Elefante Group, PS Docket No. 17-344 (filed Jan. 22, 2018). See also discussion of public interest benefits of persistent stratospheric communications systems in Letter from Edward A. Yorkgitis, Jr., Kelley Drye & Warren LLP, Counsel for Elefante Group, Inc., to Marlene Dortch, Secretary, FCC, Notice of Ex Parte Presentation, GN Docket Nos. 17-183, 14-177, IB Docket Nos. 17-95, 15-256, 97-95, and 16-408, RM-11664, and WT Docket No. 10-112, at 3-7 (filed Sep. 8, 2017).

<sup>11</sup> The 24.25-27.5 GHz band is one of eleven bands (comprising over thirty gigahertz of spectrum in total) under consideration for International Mobile Telecommunications (“IMT”) by the ITU at WRC-19 (i.e., Agenda Item 1.13). The upper 2.25 gigahertz of that band under discussion here is not essential for the rollout of high frequency band spectrum with substantial bandwidths by UMFUS-type users.

generation ground-based networks will allow for harmonization with equipment deployed in other countries in parts or all of the 24.25-27.5 GHz range, just as will be the case in the range of 3.4-4.2 GHz and other frequency ranges. The specific allocation of the 26 GHz Band for UMFUS is not necessary to achieve the objectives on international harmonization, economies of scale, or international roaming.

Finally, unlike Elefante Group, none of the commenters advocating for the 26 GHz Band offer any explanation that they would be able to operate compatibly with incumbent uses in the band. The comments of Starry, which advocates for fixed point-to-point links in the band, recognizes the difficulties and limited opportunities even fixed services would have to deploy compatibly with other uses in the 26 GHz Band: “To the extent that there are operational federal and non-federal systems [in the 26 GHz Band], the Commission can at least seek comment on whether and how to make the band available for fixed or mobile services while protecting such incumbent uses. *It may be technically difficult, and the result may be a severely inhibited band for terrestrial operations.* However, there could be uses and users that might be able to effectively coexist with the incumbent systems, and the Commission has the technical and policy tools to explore the best way to ensure coexistence.”<sup>12</sup> By contrast, based on considerable studies to date, Elefante Group is confident that stratospheric systems can compatibly operate in the 26 GHz Band, thereby achieving significantly enhanced overall use of the band while fully protecting existing uses.<sup>13</sup>

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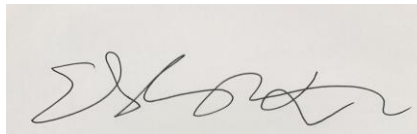
<sup>12</sup> Comments of Starry, Inc., GN Docket No. 14-177 et al., at 6 (filed Jan. 23, 2018).

<sup>13</sup> Elefante Group and Lockheed Martin are studying the compatibility of ground-based Fixed Services with persistent stratospheric communications systems in the same frequency bands. Given the propagation characteristics of bands at and above 17 GHz, the companies are optimistic about co-band sharing in a highly efficient manner in virtually all likely scenarios between the two types of systems. However, the sharing of bands in these so-called high frequency spectrum ranges between unaffiliated mobile deployments and persistent stratospheric

In conclusion, for the foregoing reasons and for those set forth in Elefante Group's initial comments, the 26 GHz Band is an optimal candidate for persistent stratospheric platform communication systems in the United States. The Commission should take steps to ensure that next generation networks can achieve their full potential and maximize the benefits of the spectrum for consumers, businesses, enterprises, institutions, and government alike by having sufficient high frequency range spectrum for stratospheric communications solutions just as the Commission is seeking to do for UMFUS and satellite systems. Making the 26 GHz Band fully available to persistent stratospheric communications systems is a key element to achieving that objective.

Respectfully submitted,

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communications systems appear to present specific difficulties it may not be possible to effectively overcome absent an extremely high degree of dynamic coordination and information sharing, without substantially limiting the effectiveness of one or both systems. Elefante Group is open to review any results that claim, more generally, that compatibility is possible between mobile and persistent stratospheric communications systems without such measures.